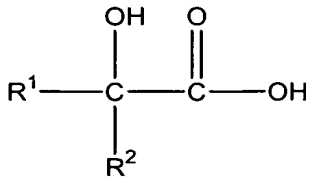
What is claimed is:

1. A process for resolving an enantiomeric mixture of an α-hydroxy acid having the following formula:



wherein R^1 is hydrogen, hydrocarbyl or substituted hydrocarbyl,
wherein R^2 is hydrogen, hydrocarbyl or substituted hydrocarbyl, the process comprising:

contacting an aqueous feed composition comprising an enantiomeric mixture of esters of the α-hydroxy acid or derivatives thereof with an enantioselective enzyme which preferentially catalyzes hydrolysis of a first enantiomeric ester to produce a first α-hydroxy acid enantiomer corresponding to said first enantiomeric ester, thereby producing a reaction product comprising (i) the first α-hydroxy acid enantiomer and (ii) unreacted α-hydroxy acid ester, and

separating first α-hydroxy acid enantiomer from unreacted α-hydroxy acid ester.

2. A process as set forth in claim 1 wherein said aqueous feed composition is contacted with a heterogeneous catalyst comprising said enantioselective enzyme immobilized on a solid support.

3. A process as set forth in claim 2 wherein said aqueous feed composition is continuously or intermittently introduced into a catalytic reaction zone containing said heterogeneous catalyst, and said reaction product is continuously or intermittently withdrawn from said reaction zone.

4. A process as set forth in claim 3 wherein said heterogeneous catalyst comprises a plurality of catalyst bodies, each of said plurality of catalyst bodies comprising a porous support structure having said enzyme bound thereto or contained therewithin.

5. A process as set forth in claim 4 wherein said porous support structure comprises a polysaccharide.

6. A process as set forth in claim 5 wherein said porous support structure comprises a polysaccharide/protein complex.

7. A process as set forth in claim 6 wherein said porous support structure comprises a polysaccharide/protein complex cross-linked with a dialdehyde.

8. A process as set forth in claim 7 wherein said porous support structure comprises an alginate/gelatin complex.

9. A process as set forth in claim 8 wherein each of said plurality of catalyst bodies comprises a porous bead or pellet having said enzyme bound thereto or entrapped therewithin.

10. A process as set forth in claim 9 wherein the catalyst bodies of said plurality have an average diameter or principal dimension between about 1 and about 4 mm.

11. A process as set forth in claim 10 wherein the catalyst bodies of said plurality have an average diameter or principal dimension between about 1.5 and about 3 mm.

12. A process as set forth in claim any of claims 6 to 11 wherein each of said plurality of catalyst bodies is formed by a process comprising:

forming a gel comprising said polysaccharide/protein complex and said enzyme; and

contacting said gel with a divalent cation in an aqueous medium to form said catalyst body.

13. A process as set forth in any of claims 6 to 9 wherein said catalyst body comprises a porous bead having said enzyme trapped therewithin and/or bound thereto.

14. A process as set forth in claim 3 wherein said feed composition is continuously or intermittently introduced into a catalyst bed within said reaction zone, said catalyst bed comprising a heterogeneous catalyst comprising catalyst bodies on or within which said enzyme is immobilized; and a reaction mixture thus formed in the catalyst bed is caused to flow through the bed, said reaction product mixture being continuously or intermittently withdrawn from the bed.

15. A process as set forth in claim 14 wherein said catalyst bed is contained within a tubular reactor through

which said reaction mixture is caused to flow in substantially plug flow.

16. A process as set forth in claim 15 wherein said tubular reactor comprises a vertical column having a fixed or fluidized bed comprising said catalyst bodies contained therewithin.

17. A process as set forth in claim 3 or 14 wherein reaction product mixture withdrawn from the catalytic reaction zone is contacted in a phase extraction zone with an aqueous extractant and an organic extractant, thereby producing an aqueous extract and an organic extract, said first α-hydroxy acid enantiomer corresponding to said first enantiomeric ester being predominantly partitioned to said aqueous extract and said unreacted α-hydroxy acid ester being predominantly partitioned to said organic extract; and said organic extract is separated from said aqueous extract.

18. A process as set forth in claim 17 wherein said unreacted ester obtained in said organic extract is recycled and introduced into said catalytic reaction zone.

19. A process as set forth in claim 18 wherein said recycled unreacted ester is racemized prior to being introduced into said catalytic reaction zone.

20. A process as set forth in claim 17 or 18 wherein a portion of the α-hydroxy acid contained in said aqueous extract is re-esterified and recycled for introduction into said catalytic reaction zone.

21. A process for the preparation of a heterogeneous catalyst for use in the enantiomerically selective hydrolysis of an α-hydroxy carboxylic acid, the process comprising:

preparing a premixture comprising a enantiomerically selective hydrolytic enzyme, an alkali metal saccharide and a protein;

heating the premixture to form a gel;

contacting the gel with a divalent cation, thereby forming a catalyst body comprising a solid porous support having said enzyme contained within the pores of the support; and

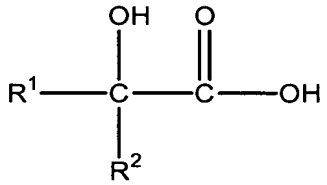
contacting enantiomeric mixture of an α-hydroxy acid ester with said catalyst body, thereby preferentially hydrolyzing a first enantiomeric ester of said mixture of esters to produce a first α-hydroxy acid enantiomer corresponding to said first ester.

22. A process as set forth in claim 21 wherein contacting of said gel with said divalent cation comprises:

forming drops of the gel; and

introducing the drops of gel into an aqueous bead formation medium comprising a divalent metal ion.

23. A process for resolving an enantiomeric mixture of an α-hydroxy acid having the following formula:



wherein R^1 is hydrogen, hydrocarbyl or substituted hydrocarbyl,

wherein R^2 is hydrogen, hydrocarbyl or substituted hydrocarbyl, and
wherein when R^1 is a substituted hydrocarbyl comprising a phosphorus atom, R^2 is hydrocarbyl or substituted hydrocarbyl, the process comprising:

forming a reaction mixture comprising (i) an enantioselective enzyme, and (ii) an enantiomeric mixture of esters of the α-hydroxy acid or derivatives thereof, wherein the enantioselective enzyme preferentially hydrolyzes a first enantiomeric ester to produce a first α-hydroxy acid enantiomer corresponding to said first enantiomeric ester,

forming a reaction product from the reaction mixture, the reaction product comprising (i) the first α-hydroxy acid enantiomer and (ii) unreacted α-hydroxy acid ester, and

separating the first α-hydroxy acid enantiomer and unreacted α-hydroxy acid ester from each other.

24. The process of claim 23, further comprising recovering the first α-hydroxy acid enantiomer.

25. The process of claim 23, wherein the first α-hydroxy acid enantiomer is the L-isomer of the α-hydroxy acid.

26. The process of claim 23, further comprising recovering the unreacted α-hydroxy acid ester.

27. The process of claim 26, wherein the unreacted α-hydroxy acid ester is hydrolyzed to form a enantiomeric

mixture having an enantiomeric excess of the D-isomer of the α-hydroxy acid.

28. The process of any one of claims 23 to 27, wherein the enantioselective enzyme is a lipase enzyme.

29. The process of claim 28, wherein the lipase enzyme is an enzyme selected from the group consisting of porcine pancreatic lipase, lipase from *Aspergillus niger*, and lipase from *Candida rugosa*.

30. The process of claim 28, wherein the lipase enzyme is porcine pancreatic lipase.

31. The process of any one of claims 23 to 30, wherein the α-hydroxy acid is a α-hydroxy acid ester selected from the group consisting of glycolic acid, lactic acid, glyceric acid, tartaric acid, citric acid, glyoxylic acid, pyruvic acid, mandelic acid, malic acid, benzilic acid, α-hydroxy analogs of naturally occurring α-amino acids, and derivatives thereof.

32. The process of claim 31, wherein the α-hydroxy analogs of naturally occurring α-amino acids are α-amino acids selected from the group consisting of asparagine, alanine, valine, leucine, isoleucine, phenylalanine, proline, serine, threonine, cysteine, methionine, tryptophan, tyrosine, glutamine, aspartic acid, glutamic acid, lysine, arginine, and histidine.

33. The process of claim 31, wherein the α-hydroxy analogs of naturally occurring α-amino acids are α-hydroxy

analogs of essential α-amino acids selected from the group consisting of isoleucine, phenylalanine, leucine, lysine, methionine, threonine, tryptophan, histidine and valine.

34. The process of claim 31, wherein the α-hydroxy analogs of naturally occurring α-amino acids are α-hydroxy analogs of α-amino acids selected from the group consisting of methionine and lysine.

35. The process of claim 31, wherein the α-hydroxy analog of a naturally occurring α-amino acid is 2-hydroxy-4-(methylthio)butyric acid.

36. The process of any one of claims 23 to 35, wherein the first α-hydroxy acid enantiomer is separated by subjection to enantioselective chromatography.

37. The process of any one of claims 23 to 35, wherein the first α-hydroxy acid and the unreacted α-hydroxy acid ester are separated from each other by phase extraction.

38. The process of claim 37 wherein the phase extraction is a two-phase extraction comprising an organic phase and an aqueous phase.

39. The process of claim 38, wherein the first α-hydroxy acid enantiomer is isolated from the aqueous phase by an isolation method selected from the group consisting of vacuum distillation, steam distillation, evaporative crystallization, freeze-drying, and rotary evaporation.

40. The process of claim 38, wherein the α-hydroxy acid ester is isolated from the organic phase by an isolation method selected from the group consisting of vacuum distillation, steam distillation, evaporative crystallization, freeze-drying, and rotary evaporation.

41. The process of any one of claims 23 to 40, wherein the pH of the reaction mixture is above at least about 5.

42. The process of any one of claims 23 to 40, wherein the pH of the reaction mixture is from about 5 to about 9.

43. The process of any one of claims 23 to 40, wherein the pH of the reaction mixture is from about 6 to about 8.

44. The process of any one of claims 23 to 40, wherein the pH of the reaction mixture is from about 6.5 to about 7.5.

45. The process of any one of claims 23 to 44, wherein the temperature of the reaction mixture is above at least about 15° C.

46. The process of any one of claims 23 to 44, wherein the temperature of the reaction mixture is from about 15° C to about 35° C.

47. The process of any one of claims 23 to 44, wherein the temperature of the reaction mixture is from about 20° C to about 30° C.

48. The process of any one of claims 23 to 47, wherein the reaction mixture is agitated.

49. The process of claim 48, wherein the reaction mixture is agitated by stirring.

50. The process of any one of claims 23 to 49 wherein the enantiomeric mixture of esters of the α-hydroxy acid is formed in a esterification reaction mixture comprising the α-hydroxy acid and an alcohol.

51. The process of claim 50 wherein the alcohol is selected from the group consisting of alkyl, alkenyl, and alkynyl alcohols.

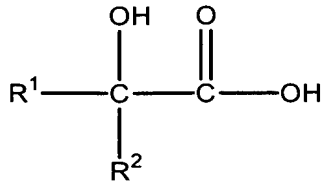
52. The process of claim 51, wherein the alcohol is an alkyl alcohol is selected from lower alcohols having 1-20 carbons.

53. The process of claim 52, wherein the alcohol is an alcohol selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, tert-butyl, pentyl, and hexyl alcohols.

54. The process of claim 53, wherein the alcohol is an alcohol selected from the group consisting of propyl and butyl alcohols.

55. The process of claim 54, wherein the alcohol is butanol.

56. A stereoisomeric mixture having an enantiomeric excess of a stereoisomer of an α-hydroxy acid having the following formula:



wherein R^1 is hydrogen, hydrocarbyl or substituted hydrocarbyl,
wherein R^2 is hydrogen, hydrocarbyl or substituted hydrocarbyl, and
wherein when R^1 is a substituted hydrocarbyl comprising a phosphorus atom, R^2 must be a hydrocarbyl or substituted hydrocarbyl, the stereoisomer mixture being formed by a process comprising:

forming a reaction mixture comprising (i) an enantioselective enzyme, and (ii) an enantiomeric mixture of esters of the α-hydroxy acid, wherein the enantioselective enzyme preferentially hydrolyzes a first enantiomeric ester to produce a first mixture of α-hydroxy acid enantiomers that contains an enantiomeric excess of the first α-hydroxy acid enantiomer,

forming a reaction product from the reaction mixture comprising (i) the first mixture of α-hydroxy acid enantiomers, and (ii) unreacted second α-hydroxy acid ester,

separating the first mixture of α-hydroxy acid enantiomers and unreacted α-hydroxy acid ester enantiomers in the reaction product from each other, and

recovering the first mixture of α-hydroxy acid enantiomers to form the stereoisomeric mixture.

57. The process of claim 56, wherein the first mixture of α-hydroxy acid enantiomers is comprised of an enantiomeric excess of the L-isomer of the α-hydroxy acid.

58. The process of claim 56, further comprising recovering the unreacted α-hydroxy acid ester.

59. The process of claim 57, wherein the unreacted α-hydroxy acid ester is hydrolyzed to form a second mixture of α-hydroxy acid enantiomers that has an enantiomeric excess of the D-isomer of the α-hydroxy acid.

60. The stereoisomeric mixture of any one of claims 56 to 59, wherein the enantioselective enzyme is a lipase enzyme.

61. The stereoisomeric mixture of claim 60, wherein the lipase enzyme is an enzyme selected from the group consisting of porcine pancreatic lipase, lipase from *Aspergillus niger*, and lipase from *Candida rugosa*.

62. The stereoisomeric mixture of claim 60, wherein the lipase enzyme is porcine pancreatic lipase.

63. The stereoisomeric mixture of any one of claims 56 to 62, wherein the α-hydroxy acid is a α-hydroxy acid ester selected from the group consisting of glycolic acid, lactic acid, glyceric acid, tartaric acid, citric acid, glyoxylic acid, pyruvic acid, mandelic acid, malic acid,

benzilic acid, α-hydroxy analogs of naturally occurring α-amino acids, and derivatives thereof.

64. The stereoisomeric mixture of claim 63, wherein the α-hydroxy analogs of naturally occurring α-amino acids are α-amino acids selected from the group consisting of asparagine, alanine, valine, leucine, isoleucine, phenylalanine, proline, serine, threonine, cysteine, methionine, tryptophan, tyrosine, glutamine, aspartic acid, glutamic acid, lysine, arginine, and histidine.

65. The stereoisomeric mixture of claim 63, wherein the α-hydroxy analogs of naturally occurring α-amino acids are α-hydroxy analogs of essential α-amino acids selected from the group consisting of isoleucine, phenylalanine, leucine, lysine, methionine, threonine, tryptophan, histidine and valine.

66. The stereoisomeric mixture of claim 63, wherein the α-hydroxy analogs of naturally occurring α-amino acids are α-hydroxy analogs of α-amino acids selected from the group consisting of methionine and lysine.

67. The stereoisomeric mixture of claim 63, wherein the α-hydroxy analog of a naturally occurring α-amino acid is 2-hydroxy-4-(methylthio)butyric acid.

68. The stereoisomeric mixture of any one of claims 56 to 67, wherein the hydrolyzed α-hydroxy acid enantiomer or derivative thereof is separated by subjection to enantioselective chromatography.

69. The stereoisomeric mixture of any one of claims 56 to 67, wherein the hydrolyzed α-hydroxy acid or derivative thereof and the unreacted α-hydroxy acid ester or derivative thereof are separated from each other by phase extraction.

70. The stereoisomeric mixture of claim 69 wherein the phase extraction is a two-phase extraction comprising an organic phase and an aqueous phase.

71. The stereoisomeric mixture of claim 70, wherein the hydrolyzed α-hydroxy acid enantiomer or derivative thereof is isolated from an aqueous phase by an isolation method selected from the group consisting of vacuum distillation, steam distillation, evaporative crystallization, freeze-drying, and rotary evaporation.

72. The stereoisomeric mixture of claim 70, wherein the α-hydroxy acid ester or derivative thereof is isolated from a phase by an isolation method selected from the group consisting of vacuum distillation, steam distillation, evaporative crystallization, freeze-drying, and rotary evaporation.

73. The stereoisomeric mixture of any one of claims 56 to 72, wherein the pH of the reaction mixture is above at least about 5.

74. The stereoisomeric mixture of any one of claims 56 to 72, wherein the pH of the reaction mixture is from about 5 to about 9.

75. The stereoisomeric mixture of any one of claims 56 to 72, wherein the pH of the reaction mixture is from about 6 to about 8.

76. The stereoisomeric mixture of any one of claims 56 to 72, wherein the pH of the reaction mixture is from about 6.5 to about 7.5.

77. The stereoisomeric mixture of any one of claims 56 to 76, wherein the temperature of the reaction mixture is above at least about 15° C.

78. The stereoisomeric mixture of any one of claims 56 to 76, wherein the temperature of the reaction mixture is from about 15° C to about 35° C.

79. The stereoisomeric mixture of any one of claims 56 to 76, wherein the temperature of the reaction mixture is from about 20° C to about 30° C.

80. The stereoisomeric mixture of any one of claims 56 to 76, wherein the reaction mixture is agitated.

81. The stereoisomeric mixture of claim 80, wherein the reaction mixture is agitated by stirring.

82. The stereoisomeric mixture of any one of claims 56 to 81 wherein the enantiomeric mixture of esters of the α-hydroxy acid or derivative thereof is formed in a esterification reaction mixture comprising the α-hydroxy acid or derivative thereof and an alcohol.

83. The stereoisomeric mixture of claim 82 wherein the alcohol is selected from the group consisting of alkyl, alkenyl, and alkynyl alcohols.

84. The stereoisomeric mixture of claim 83, wherein the alcohol is an alkyl alcohol is selected from lower alcohols having 1-20 carbons.

85. The stereoisomeric mixture of claim 84, wherein the alcohol is an alcohol selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, tert-butyl, pentyl, and hexyl alcohols.

86. The stereoisomeric mixture of claim 85, wherein the alcohol is an alcohol selected from the group consisting of propyl and butyl alcohols.

87. The stereoisomeric mixture of claim 86, wherein the alcohol is butanol.

88. The stereoisomeric mixture of any one of claims 56 to 87 wherein at least 60% of the first mixture α-hydroxy acid enantiomers are the L-isomer of α-hydroxy acid.

89. The stereoisomeric mixture of any one of claims 56 to 87 wherein at least 70% of the first mixture α-hydroxy acid enantiomers are the L-isomer of α-hydroxy acid.

90. The stereoisomeric mixture of any one of claims 56 to 87 wherein at least 80% of the first mixture α-

hydroxy acid enantiomers are the L-isomer of α-hydroxy acid.

91. The stereoisomeric mixture of any one of claims 56 to 87 wherein at least 90% of the first mixture α-hydroxy acid enantiomers are the L-isomer of α-hydroxy acid.

92. The stereoisomeric mixture of any one of claims 59 to 87 wherein at least 60% of the second mixture α-hydroxy acid enantiomers are the D-isomer of α-hydroxy acid.

93. The stereoisomeric mixture of any one of claims 59 to 87 wherein at least 70% of the second mixture α-hydroxy acid enantiomers are the D-isomer of α-hydroxy acid.

94. The stereoisomeric mixture of any one of claims 59 to 87 wherein at least 80% of the second mixture α-hydroxy acid enantiomers are the D-isomer of α-hydroxy acid.

95. The stereoisomeric mixture of any one of claims 59 to 87 wherein at least 90% of the second mixture α-hydroxy acid enantiomers are the D-isomer of α-hydroxy acid.

96. A feed supplement comprising the stereomeric mixture of any one of claims 56 to 87.

97. The feed supplement of claim 96 wherein at least 60% of the first mixture of α-hydroxy acid enantiomers are the L-isomer of α-hydroxy acid.

98. The feed supplement of claim 96 wherein at least 70% of the first mixture α-hydroxy acid enantiomers are the L-isomer of α-hydroxy acid.

99. The feed supplement of claim 96 wherein at least 80% of the first mixture α-hydroxy acid enantiomers are the L-isomer of α-hydroxy acid.

100. The feed supplement of claim 96 wherein at least 90% of the first mixture α-hydroxy acid enantiomers are the L-isomer of α-hydroxy acid.

101. A feed supplement comprising the second mixture of α-hydroxy acid enantiomers of any one of claims 59 to 87 wherein the first mixture of α-hydroxy acid enantiomers has an enantiomeric excess of the D-isomer of the α-hydroxy acid.

102. The feed supplement of claim 101 wherein at least 60% of the second mixture α-hydroxy acid enantiomers are the D-isomer of α-hydroxy acid.

103. The feed supplement of claim 101 wherein at least 70% of the second mixture α-hydroxy acid enantiomers are the D-isomer of α-hydroxy acid.

104. The feed supplement of claim 101wherein at least 80% of the second mixture α-hydroxy acid enantiomers are the D-isomer of α-hydroxy acid.

105. The feed supplement of claim 101 wherein at least 90% of the second mixture α-hydroxy acid enantiomers are the D-isomer of α-hydroxy acid.

106. A process for supplementing the diet of an animal, the process comprising providing the feed supplement of any one of claims 96 to 105 to the animal.

107. The process of claim 106, wherein the animal is an animal selected from the group consisting of humans, livestock, and aquaculture.

108. The process of claim 107, wherein the livestock is selected from the group consisting of poultry, ruminants, swine, horses.

109. The process of claim 108, wherein the livestock is poultry, wherein the poultry is selected from the group consisting of chickens and turkeys.

110. The process of claim 109, wherein the livestock is poultry, wherein the poultry is selected from the group consisting of chicken hatchlings and turkey hatchlings.

111. The process of claim 108, wherein the livestock is a ruminant, wherein the ruminant is selected from the group consisting of dairy and beef cattle, sheep, and goats.

112. The process of claim 111, wherein the dairy cattle is a lactating dairy cow.

113. A process for producing and resolving an α-hydroxy acid enantiomer or derivative thereof in an enantiomeric mixture, the process comprising:

forming a first reaction mixture comprising an α-hydroxy acid and an alcohol,

forming a first product mixture from the first reaction mixture, the first product mixture comprising an α-hydroxy ester corresponding to the α-hydroxy acid,

forming a second reaction mixture from the first product mixture, the second reaction mixture comprising the α-hydroxy ester and an enantioselective enzyme,

forming a second product mixture from the second reaction mixture, the second product mixture comprising a first α-hydroxy acid and unhydrolyzed α-hydroxy ester, wherein the first α-hydroxy acid is produced by the enantioselective hydrolysis of a first enantiomer of the α-hydroxy ester, and

separating the first α-hydroxy acid and unhydrolyzed α-hydroxy ester in the second product mixture from each other.

114. The process of claim 113 wherein the α-hydroxy acid in the first reaction mixture is selected from the group consisting of glycolic acid, lactic acid, glyceric acid, tartaric acid, citric acid, glyoxylic acid, pyruvic acid, mandelic acid, malic acid, benzilic acid, α-hydroxy analogs of naturally occurring α-amino acids, and derivatives thereof.

115. The process of claim 112, wherein the α-hydroxy analogs of naturally occurring α-amino acids are α-amino acids selected from the group consisting of asparagine, glycine, alanine, valine, leucine, isoleucine, phenylalanine, proline, serine, threonine, cysteine, methionine, tryptophan, tyrosine, glutamine, aspartic acid, glutamic acid, lysine, arginine, and histidine.

116. The process of claim 114, wherein the α-hydroxy analogs of naturally occurring α-amino acids are α-hydroxy analogs of essential α-amino acids selected from the group consisting of isoleucine, phenylalanine, leucine, lysine, methionine, threonine, tryptophan, histidine and valine.

117. The process of claim 114, wherein the α-hydroxy analogs of naturally occurring α-amino acids are α-hydroxy analogs of α-amino acids selected from the group consisting of methionine and lysine.

118. The process of claim 114, wherein the α-hydroxy analog of a naturally occurring α-amino acid is 2-hydroxy-4-(methylthio)butyric acid.

119. The process of any one of claims 113 to 118 wherein the alcohol in the first reaction mixture is selected from the group consisting of methanol, ethanol, propanol, isopropanol and butanol.

120. The process of any one of claims 113 to 119 wherein the enantioselective enzyme is a lipase enzyme.

121. The process of claim 120, wherein the lipase enzyme is an enzyme selected from the group consisting of porcine pancreatic lipase and lipase from *Aspergillus niger*.

122. The process of claim 120, wherein the lipase enzyme is porcine pancreatic lipase.

123. The process of any one of claims 113 to 122 wherein the α-hydroxy ester present in the second reaction mixture is an ester 2-hydroxy-4-(methylthio)butyric acid.

124. The process of claim 123 wherein the ester of 2-hydroxy-4-(methylthio)butyric acid present in the second reaction mixture is selected from the group consisting of its methyl ester, ethyl ester, propyl ester, isopropyl ester, and butyl ester.

125. The process of claim 124 wherein the ester of 2-hydroxy-4-(methylthio)butyric acid present in the second reaction mixture is the butyl ester.

126. The process of any one of claims 113 to 1253 wherein the first reaction mixture is at least about 65° C.

127. The process of any one of claims 13 to 125 wherein the first reaction mixture is from about 65° C to about 95° C.

128. The process of any one of claims 113 to 125 wherein the first reaction mixture is from about 70° C to about 90° C.

129. The process of any one of claims 113 to 125 wherein the first reaction mixture is from about 80° C to about 90° C.

130. The process of any one of claims 113 to 129 wherein the second reaction mixture has a pH of at least about 5.

131. The process of any one of claims 113 to 129 wherein the second reaction mixture has a pH from about 5 to about 9.

132. The process of any one of claims 113 to 129 wherein the second reaction mixture has a pH from about 6 to about 8.

133. The process of any one of claims 113 to 129 wherein the second reaction mixture has a pH from about 6.5 to about 7.5.

134. The process of any one of claims 113 to 133 wherein the second reaction mixture is at least about 15° C.

135. The process of any one of claims 113 to 133 wherein the first reaction mixture is from about 15° C to about 35° C.

136. The process of any one of claims 113 to 133 wherein the first reaction mixture is from about 20° C to about 30° C.

137. The process of any one of claims 113 to 136 wherein said second product mixture is dried and diluted by introducing a solvent to produce a final product mixture comprising the first α-hydroxy acid and unhydrolyzed α-hydroxy ester.

138. The process of claim 137 wherein the solvent introduced to the dried second product mixture comprises ethyl acetate.

139. The process of claim 137 wherein an aqueous solvent is introduced to the final product mixture, thereby producing a first aqueous phase comprising the first α-hydroxy acid and a second phase comprising unhydrolyzed α-hydroxy ester.

140. The process of claim 139 wherein said aqueous solvent comprises sodium bicarbonate.

141. The process of claim 139 wherein said first aqueous phase comprising the first α-hydroxy acid and a second phase comprising α-hydroxy ester are separated from each other.

142. The process of claim 141 wherein said first aqueous phase and second phase are separated from each other by centrifuging.

143. The process of claim 139 wherein the first α-hydroxy acid is recovered from the first aqueous phase by a method selected from the group consisting of vacuum distillation, steam distillation, evaporative crystallization and freeze-drying.

144. The process of claim 139 wherein the unhydrolyzed α-hydroxy ester is selected from the second phase by a method selected from the group consisting of vacuum distillation, steam distillation, evaporative crystallization and freeze-drying.

145. The process of any one of claims 113 to 144 wherein the enantioselective enzyme is immobilized and the second reaction mixture comprising the α-hydroxy ester is continuously contacted with the enantioselective enzyme to continuously hydrolyze the α-hydroxy acid ester to produce the second product mixture comprising the first α-hydroxy acid and unhydrolyzed α-hydroxy ester.

146. The process of claim 145 wherein the first α-hydroxy acid is continuously removed from the second product mixture.

147. A process for producing and continuously resolving an α-hydroxy acid enantiomer or derivative thereof in an enantiomeric mixture, the process comprising:

forming a first reaction mixture comprising an α-hydroxy acid and an alcohol,

forming a first product mixture from the first reaction mixture, the first product mixture comprising an α-hydroxy ester corresponding to the α-hydroxy acid,

forming a second reaction mixture from the first product mixture, the second reaction mixture comprising the α-hydroxy ester,

forming a second product mixture by continuously contacting the second reaction mixture with an immobilized enantioselective enzyme, the second product mixture

comprising a first α-hydroxy acid and unhydrolyzed α-hydroxy ester, wherein the first α-hydroxy acid is produced by the enantioselective hydrolysis of a first enantiomer of the α-hydroxy ester, and

continuously separating the α-hydroxy acid produced by the enantioselective hydrolysis of the α-hydroxy ester from the unreacted α-hydroxy ester.

148. The process of claim 147 wherein the first α-hydroxy acid is continuously removed from the second product mixture.

149. The process of any one of claims 147 to 148 wherein the second reaction mixture comprising the α-hydroxy ester is intermittently introduced to the immobilized enantioselective enzyme within a reaction zone in which the α-hydroxy ester is hydrolyzed to produce the first α-hydroxy acid.

150. The process of any one of claims 147 to 149 wherein the first α-hydroxy acid and unreacted α-hydroxy ester are intermittently removed from the reaction zone.

151. The process of any one of claims 147 to 150 wherein the first α-hydroxy acid and unreacted α-hydroxy ester are continuously removed from the reaction zone.

152. The process of any one of claims 147 to 151 wherein the second reaction mixture comprising the α-hydroxy ester is continuously introduced to the immobilized enantioselective enzyme within a reaction zone in which the

α-hydroxy ester is hydrolyzed to produce the first α-hydroxy acid.

153. The process of any one of claims 147 to 152 wherein the first α-hydroxy acid and unreacted α-hydroxy ester are intermittently removed from the reaction zone.

154. The process of any one of claims 147 to 153 wherein the first α-hydroxy acid and unreacted α-hydroxy ester are continuously removed from the reaction zone.